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ENERGY AND REALITY.[1]

I. Is Experience Self-Supporting?

THE story of the concept of being is a long one and constitutes pretty much the whole story of philosophy. But whatever may be our opinion of *Urstoff*, upon one thing we are now agreed, that experience stuff, as revealed in our immediate feelings and sensations, on the one hand, and our ideal construction, on the other, must be the starting-point of all our investigations. In terms of this we must differentiate and express the problems of the universe in so far as they can be expressed. But is reality through and through experience?

It has been maintained from time to time, and recently by so brilliant an advocate as Professor James, that experience is self-sufficient; that it "leans on nothing but itself"; and that we have no need, therefore, of any reference outside of experience. If we examine the problems of experience more closely, however, we shall find that experience in many ways seems to depend upon an extra-experiential constitution. I shall mention a few cases in which experience implies such a constitution.

For one thing, experience does not account for its own continuity, either as involved in intersubjective relations in space or as involved in bridging over from moment to moment in time. To speak of the former continuity first: In order for two egos or subjects to come to an understanding with each other, or to communicate their feelings and ideas by means of "winged words," something more is necessary than their respective fields of consciousness. Certain processes must be interpolated, such as physiological movements on the part of the speaker, air-waves which take up these movements, and end-organs, with a nervous system, reacting to these

[1] This paper is the fifth and last in a series of studies on the attributes of reality. The first study appeared as a monograph, entitled "Time and Reality," *Psychological Review, Monograph Series*, No. 26, 1904; "Space and Reality," this Journal, Vol. III., pp. 533, 589; "The Ought and Reality," *International Journal of Ethics*, Vol. XVII., p. 454; and "Consciousness and Reality," this Journal, Vol. V., pp. 169, 225.

stimuli on the part of the listener. Now these intermediate processes can not be regarded as experience in their own right. Unless we go back to the breathing world of Anaximenes we would not be likely to regard air-waves as themselves experience. Even the immediatist, unless he is a solipsist, would have to admit that other people's immediacy is not his immediacy, but is communicated by the help of intermediary processes. This would be true even on a telepathic hypothesis. How it is possible, by means of such non-conscious intermediaries, for conscious egos to meet in a common world, we can not discuss here.

But, in the second place, we can not account for the continuity of experience in time, any more than in space, as leaning upon nothing but experience. To use Professor James's illustration: Peter and Paul go to sleep in the same bed; and while not conscious in the meantime, so far as evidence proves, each one, on waking up, is immediately conscious of his own past, and one does not get mixed up with the other. Such continuity between our waking moments, bridging over the intervals of experience, must require something besides experience. The reason that experience in waking up connects with experience before going to sleep is that both lean upon a world of processes which is not experiential. The machinery of association, upon which living-over experience depends, is not itself experience. Nor could we invoke here a permanent experience as a solution of the problem; for the permanent experience surely could not account for the coming and going of experience as we know it. The same idea might be illustrated equally well with reference to social experience or the funded knowledge of the race. Clay tablets constituting libraries of ancient lore have been unearthed in recent years in the Orient. Were the ancient libraries of Nineveh and Babylon experience while buried in the ruins? Did they not rather become experience again, after thousands of years, when they were unearthed and deciphered by recent discoverers? Perhaps you retort that they were possible experience in the meantime. But what does possible experience mean in such a case except that they were *not* experience until they became continuous, as perception and interpretation, with human beings who stumbled upon the libraries? The phrase "possible experience" only hides the problem; and if it means anything when pressed home, it is that experience sometimes leans on processes that are not experience. Possible experience, which is not experience, is no more experience than possible electricity, without all the conditions for electricity, is electricity. Whether within individual history, therefore, or within the history of the race, it is evident that, when you try to explain its continuity, experience leans upon an extra-experiential constitution.

What I have shown with reference to continuity might be shown equally well with reference to interest. Take, first, a case of primary interest. Why do brilliant things, moving things, loud things, things to suck, etc., fascinate the infant? Why does the chicken peck at certain things on the ground and shy away at certain movements, etc.? Not because of experience, surely, because it has no past experience to bank on. If we would find the explanation for such interest, we must go to biological structure and not to psychological association. We sum it up by saying that the child and the chicken are so constituted as to feel this way in the presence of such stimuli. Evidently experience leans upon what is not experience, as regards primary interest.

And if you take into account the more general demands or postulates that underlie psychological activities, they, too, seem to carry us beyond experience. Why is consistency pleasing and contradiction disagreeable to the cultured man? Why do certain forms and combinations of colors and of sounds stimulate him to appreciation and excite the feeling for the beautiful? Why do certain things provoke disgust and other things approval? Partly, no doubt, on account of experience; but if certain instinctive qualifications were lacking, or if the instinctive constitution were different, the same situations might produce entirely opposite feelings on the part of individual experience, as is exemplified even now in different races.

But not only is the woof of experience in the making thus conditioned by an instinctive warp which experience can not make or explain, but culture and meaning, the net result of experience and tendency, are funded in a way which, to a large extent at least, is unavailable as experience. Physiological tendency comes to do the work of memory. It is precious little that a man out of college twenty years, and engaged in new pursuits, can recall of his college curriculum. And yet he feels differently and acts differently because of his college course. Here, again, in the very definition of culture, we come upon a subtle relation to a reality which is not experience. The ego, therefore, whatever else it may be, is not merely a "bundle of perceptions" or of any other conscious states. They are not the whole story, at least.

Another road might have been chosen to show the insufficiency of experience as an account of reality. If we take the immediatist point of view, what reality can we accord to nature? Is nature merely a "bundle of perceptions"? We have already found such an account inadequate to the ego; on closer scrutiny we shall find it equally inadequate to nature. If we insist that the objects of nature are statable merely as our perceptions, we must be prepared

to answer several questions. Does reality consist merely in the perceptual differences that things *do* make, or does it also include the differences which they *can* or *will* make under other conditions than the present? But if we admit *will* and *can*, have we not admitted a larger constitution than experience? And, then, what about the constancies or uniformities in our perceptions, upon which all our expectancies or scientific laws are based? Is it part of perception that perceptions shall repeat themselves in certain describable and definite ways? But if perceptions do not exist in the meantime, it is hard to see how this uniformity or repetition can be a character of the perceptions. If *esse* is *percipi*, it is hard to see what reality there can be when there is no *percipi*. In the prediction of an eclipse a thousand years from now, or the reading of an eclipse a thousand years ago, there surely is no present perception of the fact; and absent perception is hardly perception. If there can be such a thing, then, as future perceptions or the reading off of past perceptions, experience must lean upon a non-experiential constitution.

But this is not the whole difficulty of the phenomenalistic theory of nature. A deeper problem confronts us. Can an individual, whether conscious or unconscious, be resolved into relations? Can a thing be regarded as having merely an outside and no inside? By thus regarding it we shall, indeed, avoid the knotty problem of "the thing itself"; but is our account of reality fair and complete? Is a thing merely what it does, as Lotze and Plato's Eleatic Stranger tell us, waiving for the time being the difficulty of what it may do? In the case of one sort of thing at least, namely the purposive ego, we must admit that he is not merely what he does, his external continuities, in the sense of the perceptions he produces in us; but he is also something on his own account, a center of appreciation and willing. This is the real core of the ego, not the sight-touch-motor complex. The latter is the clothes, or part of them; and an individual consisting merely of clothes would be a funny sort of an individual. The ego, to use a good Hegelian distinction, must be something *für sich* and not merely *an sich*, something on its own account as well as something for others. If only purposive beings have an inside, is the baby merely an outside, merely clothes? It seems to have a core of feeling of its own, however crude. And what about animals? Are they merely an outside with no inside? No, they, too, seem to have a core of appetite and feeling which we must acknowledge. And while we know little about the simpler forms of nature, at least they are not merely fictions of ours. Our agreements about them are *forced* agreements; they are not created by convention; and we must learn to adjust ourselves to these simpler

realities in order to control them and realize our purposes. If we would keep dry in the rain-storm, we must bring our umbrella and other togs along. Approaching the problem, then, from the point of view of the will or our active purposes, we can not resolve reality, whether conscious or unconscious, into bundles of perception, or into experience of any form, altogether.

But how shall we conceive this extra-experiential constitution? Two important hypotheses have become classical, one that of independent and immutable substances, and the other that of the absolute. First, a word as regards the hypothesis of substances. The realistic substances may be material or spiritual; they may be the atoms of Democritus or the monads of Leibniz. It is quite wrong, then, to accuse the older realism of being materialistic. On the other hand, the substances which have counted in science have, until recent times at least, been of the extended or materialistic order. The monads of Leibniz and the qualities of Herbart have not counted in the development of science, interesting though they have been as metaphysical curiosities. The atomic theory of Democritus, adopted by modern chemistry and made exact through Berzelius's conception of weight proportions, has, on account of its convenience for modern science, come to stand for our ideal of realism.

In the older conception of atomic realism, the geometrical properties, depending upon extension, are the important ones; even after the idea of energy, in the sense of doing work, became a permanent concept in physical science, the concept of extension was long allowed to rank with the concept of energy. This gives rise to Herbert Spencer's antinomy as regards extension and force. This antinomy, however, is losing much of its relevancy by the fact that extension or mass is relegated to at least a second place in the scientific conception of physical nature.

If the physicists had consulted the philosophers and psychologists, they could have learned long ago that extension is a confused idea and has no reality outside of individual experience. Berkeley pointed out, with his psychological keenness, that the size of a thing varies with the distance and that the form varies with the angle of the perspective. He concluded, therefore, that matter could not be real. Modern psychology, with less of metaphysical interest, but with superior experimental tools, has likewise pointed out the relative character of extension. Thus it is shown that the extension seems longer when the intervening space is filled than when it is empty, whether you take tactual extension or visual extension. Where the area is too small for two points to be discriminated as two, they still have the feeling of a bigger point than either of the points previously discriminated. When a number of points are made

to stimulate the skin cells or the retinal cells successively, the extension seems larger than if the stimulation is simultaneous. Even as regards sound, we find an interesting relation between the rate of succession of physical stimuli and the sense of volume. Sounds succeeding each other at the rate of 1/500 of a second can not be discriminated as distinct sounds, and probably we can not here distinguish the duration of the successive from the simultaneous, but the successive feel bigger than the simultaneous. Not only the velocity of certain electric currents, therefore, but a certain velocity of nerve currents produces an apparent mass.

But modern physical science has been quite untouched by psychological investigation. What modern science has been concerned with has not been perceptual extension with varying conditions, but an artificial unit of extension or perception under standard conditions, as, for example, the steel-yard kept at a certain temperature and other uniform conditions in the British Museum. As long as this conventional unit could be applied under definite conditions, mass still maintained its hold as an ultimate attribute of physical reality. I say physical reality because the field of investigation, where mass units have been applied, has been narrowed down to this. Philosophy since Descartes has recognized that there is no sense in speaking of an extended will. However, even in physical science, serious doubts have arisen, though on experimental and not *a priori* grounds, as regards the reality of extension and even of weight. What has given rise to this doubt in recent science is the demonstration that neither mass nor even weight can be regarded as an absolute constant, and that, therefore, recourse must be had, for descriptive purposes, to a more ultimate concept. It has been shown by Lorentz that even mechanical mass in motion must vary with the electrodynamic field, and so is not constant. Mass, moreover, does not seem to apply with equal force to all energy: there seems to be little relevancy in speaking of electricity as having either mass or weight.

The greatest blow to the conception of mass has come from recent investigations into the nature of electricity. It has been shown that mass can actually be produced through velocity. Kaufmann, J. J. Thomson, and others have demonstrated "that if the velocity of a charged body is comparable with that of light, the mass of the body will increase with the velocity.[2] And not only that, but the experiments and calculations, according to Thomson, "support the view that the whole mass of these electrified particles arises from

[2] J. J. Thomson, "Electricity and Matter," p. 34.

their charge."[3] As a number of brilliant physicists, including J. J. Thomson, Rutherford, Strutt, etc., take the view that the atom can be resolved into negative electric charges held together by positive electricity spread over a wider volume, it is only a short distance to the view that there is "no mass other than electrodynamic inertia. But, in this case, the mass can no longer be constant; it augments with the velocity and it depends on the direction, and a body maintained by a notable velocity will not oppose the same inertia to the forces which tend to deflect it from its route as to those which tend to exhilarate or to retard its progress."[4]

Such a theory, for mathematical reasons if for no other, will be slow in gaining acceptance among ordinary chemists; but it is not any the less interesting theoretically on that account. Possibly the seventy or eighty elements of modern chemistry may be simplified by means of such a theory, but of such a simplification we have only hints at present. The recurrent similarity in the geometrical groupings which free magnets spontaneously assume in an electromagnetic field as you increase their number, as shown by Mayer's experiments, furnishes a direct analogy to the periodic law of the chemical elements and to the recurrent characteristics of these elements as shown by spectral analysis. The positive or negative chargeability of various elements shows at least an intimate connection between them and electrical energy. This theory tries with wonderful plausibility to account alike for the stability of the ordinary chemical elements and the unstability of the radioactive substances; but its most interesting aspect to us is that, like the earlier metaphysical theories of Leibniz and Boscovich, it reduces mass to energetic terms. Thus in modern physical science we have passed from a physical world which is made up of mere geometrical figures enclosing extension, as in the case of the Cartesians, to one that is non-extended, or where extension is merely a secondary function of energy. How far this hypothesis can be adopted for all

[3] It is only fair to say that Thomson in more recent publications has modified his view. As I understand it, he does not now regard it proven that the sum of the apparent masses of the negative charges equals the total mass of the atom. There is a residium of gravitational mass which must be accounted for in other ways. This is now a matter of controversy. But in any case the Cartesian idea of atoms as rigid, mathematical figures has been exploded. Both the shape and the magnitude of the atom vary with the velocity and the magnetic field. They can be changed by pressure. Energy, not mass, becomes, therefore, the primary physical reality. The atom, Thomson has shown, can be stated as the sum of its internal energy and the energy of translation.

[4] M. H. Poincaré on "The Value of Science," *Popular Science Monthly*, Vol. LXX., p. 349. For the electrical theory of matter see the lucid exposition by Hon. R. J. Strutt, in his work entitled "The Becquerel Rays and the Properties of Radium," especially pp. 184–193.

physical purposes, convenience must decide. Whether it can be regarded also as an ultimate hypothesis holding good for the whole of reality, we shall discuss later.

The motive for inventing realistic substances was no doubt the need of accounting for the seemingly potential character of things, or, to express the same idea in other words, to meet the need of social expectancy. But it has always been difficult to make clear what potential means. Where are the manifestations of light and heat when they are not manifestations? Where is the storehouse of our ideas when we do not think of them? What does the potential mean excepting that one set of changes can, under certain conditions, give rise to another set of changes; that, perhaps, what is not experience can, under certain other conditions, give rise to experience? Thus chemical changes can give rise to electrical or nervous changes. Physical energy, as light rays, is possible light in the sense that physical energy may give rise to chemical changes in the retina and these again to nerve changes in the optic nerve and occipital lobes, and these changes again to psychic processs. Thus you have the sensation of light. But physical energy, as such, is neither potentially nor actually light; it is itself. The potential, therefore, does not need to mean the static; it simply means that one set of changes is the occasion for another set of changes under certain describable conditions. And that, failing these conditions, the changes do not take place. This is the meaning of the terms possible and impossible in nature.

The most consistent attempt to state the potential is that of Anaxagoras. According to him, the fruit of Demeter which we eat and the water which we drink must contain the germs of blood and tissue and bone and hair which they serve to build up. The reason that things can produce such different results in different combinations is that everything contains a portion of everything. It is only the proportion of the elements which varies and which determines the character of the particular thing. If pain is present in all stimuli of a great intensity, then it must really be a property of those stimuli at any intensity. On such a theory, as well as according to its more modern successor, the qualitative theory of Herbart, every effect can be said to be potentially present in the sense of actually existing in the conditions which give rise to it; and recent common-sense theories as to the reality of qualities seem to point in the same direction. The difficulty with all of these theories is that we have no evidence that the bright and the dark, the dry and the moist, the heavy and the light, or any other perceptual qualities exist until they appear under certain conditions. The potential, therefore, is merely a hypothetical statement of what effects will appear, given all the conditions or the definite complex.

The need for constancy or uniformity, however, does not require absolute uniformity or absolute constancy. After all, we have no right to assume any more constancy than we find. The chemical elements do, indeed, possess a high degree of constancy, excepting, perhaps, the more recently discovered ones, such as radium; and yet we have no right to assume that they are absolutely constant. When we come to the more plastic organic and psychological processes, constancy becomes much more relative. According to the pragmatic test, generally stated, there is just as much stability or substantiality as there seems to be or as we must acknowledge. What is the use of assuming a stability which can not be verified. No doubt Plato and Aristotle are right, that the "science of those things which are in a state of flux has no existence."[5] But our world furnishes at least such a degree of uniformity as makes a reasonable adjustment to the future possible.

The weakness in the statement of the metaphysical realistic substances, which the idealistic critics have not been slow to point out, is that, inasmuch as these substances are independent and indifferent to the various combinations in which they enter, they can not account for the apparent processes, whether physical or perceptual. The material atoms become as useless to account for the physical changes as the soul substances become superfluous in accounting for the stream of conscious processes. The substances, in other words, must be known through their activity; and, therefore, activity, and not substance, becomes the fundamental thing; substances so called are a mere hypostatization of the relative uniformiites and constancies, physical and psychological, which we observe.

The other venerable hypothesis which tries to furnish a setting for our finite experience and to account for its coming and going and its relativity, is that of absolute idealism. The history of this theory is easy enough to trace; and one can not help regretting that the unity of apperception of Kant, which merely emphasizes that the world is coherent if we are sane, should have been converted into a cosmic unity, a unity of nature, by Kant's successors. To them being strung on the unity of our social interests or purposes means that nature herself must be thus strung, must be an ontological and reflective whole. This theory has, indeed, done a great service in emphasizing a part of reality, neglected on the whole by the old realism, namely, that of ideals and institutions. Its insistence upon an ideal of systematic unity has had its great importance, too, as an ideal of knowledge. Even if reality can not be regarded as such a systematic unity of experience, the dream of science must be to weave together our human purposes and interests

[5] Aristotle, "Metaphysics," Book XII., Chap. 4, § 3.

into such a unity. Epistemologically, therefore, the theory has done great service, whatever may be its one-sidedness. It has also fulfilled and will always fulfill an important religious function in many lives in which the esthetic and intellectual craving is more prominent than the ethical and practical.

But, in spite of the historical importance of this venerable hypothesis, it has striking weaknesses. It is not at all clear how an eternal and complete system of experience can account in any way for the coming and going, the tragedies and successes, of our experience. The absolute as an hypothesis fails as completely, and for the same reason, as the realistic substances in meeting the world of process; and we must go to work, therefore, independently of such an hypothesis, beautiful and esthetically satisfying as it may be, to meet the problems of our finite world of change.

Moreover, as Plato has long ago pointed out in the "Parmenides," not only could not such a system of ideals meet the problems of change, but the absolute could not know our finite world, nor could we know it. That we could not know it must seem apparent enough, for if we knew what an absolute experience is, we should already now possess such an absolute experience, as, indeed, the absolute idealists have not been slow to claim; but, even in that case, we, after all, know only what we know. The absolute itself becomes merely our construction or our definition of our finite experience; and we have failed to reach the permanent and eternal for which the absolute was supposed to stand. Our absolutes must vary with the growing insight of the individual and the race, with the evolutionary process of human experience.

If we can not know the absolute, neither can the absolute know us. It could not know our failures, our ignorance, and our despairs as these failures and ignorance and despairs are for us. The very fragmentariness of these human experiences from the absolute point of view would convert our despairs into hopes, our tragedies into comedies, and our failures into successes. Such an absolute, then, even if it existed, could not account for the world of change, with its adjustments and maladjustments and its different levels of appreciation. Like the realistic substances, it is a hypostatization and possesses all the relativity that the unity of finite human experience, which created it, must possess. That which explains process must manifest itself in the process, and, therefore, must itself be process. The meaning we can snatch from the flux of things possesses, indeed, a certain eternity while it lasts; it aids us to prepare for the future, as prophetic of the larger insight and the larger experience to come. But as for absolute permanence, we know this even less in the field of human experience than in the case of

chemical elements. The old static view of being, therefore, has given place to the view of dynamic processes, whether as regards the atoms of the physical sciences or the images and concepts of psychology. Being = energy.

JOHN E. BOODIN.

UNIVERSITY OF KANSAS.

DISCUSSION

THE LOGICAL CHARACTER OF IDEAS

SAID John Stuart Mill: "To draw inferences has been said to be the great business of life. . . . It is the only occupation in which the mind never ceases to be engaged." If this be so, it seems a pity that Mill did not recognize that this business identifies what we mean when we say "mind." If he had recognized this, he would have cast the weight of his immense influence not only against the conception that mind is itself a substance, but also against the conception that it is a collection of existential states or attributes without any substance in which to inhere; and would thereby have done much to free logic from epistemological metaphysics. In any case, an account of intellectual operations and conditions from the standpoint of the role played and position occupied in the business of drawing inferences is a different sort of thing from that which regards them as having an existence *per se*, and which treats them as marking some sort of existential material distinct from the *things* which figure in inference-drawing. This latter type of treatment is that which underlies the psychology which itself has adopted uncritically the remnants of the metaphysics of soul substance: the idea of accidents without the substance.[1] This assumption from metaphysical psychology—the assumption of consciousness as an existent stuff or existent process—is then carried over into an examination of knowledge, so as to make the theory of knowledge not logic (an account of the ways in which valid inferences or conclusions from things to other things are made), but epistemology.

We have, therefore, the result (so unfortunate for logic) that logic is not free to go its own way, but is compromised by the assumption that knowledge goes on not in terms of things (I use

[1] This conception of "consciousness" as a sort of reduplicate world of things comes to us, I think, chiefly from Hume's conception that the "*mind* is nothing but a heap, a collection of different perceptions, united together by certain relations." "Treatise of Human Nature," Bk. I., Pt. IV., Section 2. For the evolution of this sort of notion out of the immaterial substance notion, see Bush, "A Factor in the Genesis of Idealism," in the James *Festschrift*.

"things" in the broadest sense, as equalling *res,* and covering affairs, concerns, acts, as well as "things" in the narrower sense), but in terms of a relation *between* things and a peculiar existence made up of consciousness, or else between things and functional operations of this existence. If it could be shown that psychology is essentially not a science of states of consciousness, but of behavior, conceived as a process of continuous readjustment, then the undoubted facts which go by the name of sensation, perception, image, emotion, concept, would be interpreted to mean peculiar (*i. e.,* specifically qualitative) epochs, phases, and crises in the scheme of behavior. The supposedly scientific basis for the belief that states of consciousness inherently define a separate type of existence would be done away with. Inferential knowledge, knowledge involving reflection, *psychologically* viewed, would be assimilated to a certain mode of readaptation of functions, involving shock and the need of control; knowledge in the sense of direct non-reflective presence of things would be identified (psychologically) with relatively stable or completed adjustments. I can not profess to speak for psychologists, but it is an obvious characteristic of the contemporary status of psychology that one school (the so-called functional or dynamic) operates with nothing more than at most a conventional and perfunctory reference to "states of consciousness"; while the orthodox school has to make constant concessions to ideas of the behavior type. It introduces the conception of fatigue, practise, and habituation. It makes its fundamental classifications on the basis of physiological distinctions (*e. g.,* the centrally initiated and the peripherally initiated), which, from a biological standpoint, are certainly distinctions of the structures which are involved in the performance of functions.

One of the aims of the "Studies in Logical Theory" was to show, on the negative or critical side, that the type of logical theory which professedly starts its account of knowledge from mere states of consciousness is compelled at every crucial juncture to assume *things,* and to define its so-called mental states in terms of things;[2] and on the positive side, to show that, logically considered, such distinctions as sensation, image, etc., mark instruments and crises in the development of controlled judgment, *i. e.,* of inferential conclusions. It perhaps was not surprising that this effort should have been criticized, not on its own merits, but on the assumption that this correspondence of the (functional) psychological and the logical

[2] See, for example, page 31. "Thus that which is 'nothing but a state of our consciousness' turns out straightway to be a specifically determined objective fact in a system of facts," and, page 58, "actual sensation is determined as an event in a world of events."

points of view was intended in terms of the psychology which obtained in the *critic's* mind—to wit, the psychology based on the assumption of consciousness as a separate existence or process. Thus when Dr. Pratt, in a recent discussion,[3] says that the aforesaid "Essays" "might well have been written from the standpoint of solipsism," I accordingly find an unintended compliment. Not that they were written, I hasten to add, from the solipsistic standpoint, but that they were written from a *logical* standpoint, to which the solipsistic controversy is irrelevant;—since a logical inquiry is concerned only with inferential relations among things, not with preconceptions about a lonely consciousness, or soul, or self. The assumption of a separate ontological world of consciousness which either *is* the self or is the possession of some self simply does not enter into the discussion.

When Dr. Pratt speaks of a "private stream of consciousness," of "outer realities that never come within one's own private stream of consciousness," and of a relation between "these realities and our judgments about them, a relation which from the nature of the case one can never experience," and "puts a dilemma" on the basis of these assumptions (p. 131), he puts, indeed, a dilemma to those who hold to these assumptions, but he misses the point of the "Logical Studies." Whether with such assumptions Dr. Pratt and others who hold to them can logically escape solipsism—except by saying they escape it—is also a matter for them to consider.

In the earlier part of his article, however, Dr. Pratt seems to admit that logical inquiry may be carried on in its own terms, without being compromised by the necessity of accommodating it to foregone epistemological assumptions. He accepts the position of the "concrete situation" (p. 123), and emphasizes the notion that the center of the problem of the truth of ideas is found in the problem of judgment (p. 130).[4] He gives an illustration, moreover, on the basis of which points at issue may be logically, not epistemologically, discussed. Dr. Pratt says: "Thus I believe my friend *B* is in Constantinople. If *B* really is in Constantinople, my thought is true. I confess it is impossible for me to see how anything could be simpler than this" (p. 124). In short, "a thought is true if the object of thought is as you think it." Just before this (p. 123), however, Dr. Pratt has discriminated another sense of truth which marks a current, a correct, and an intelligible usage. This is the

[3] This JOURNAL, Vol. V., p. 131, note.

[4] Just how this doctrine is to be reconciled with the other assertion that the problem of knowledge is concerned with the relation (which "by the nature of the case can not be experienced") between judgments *in* a private stream of consciousness and unexperienced objects *outside* the stream, it would be interesting to find out.

identification of truth "with *known fact*" (italics in original). What is the relation of these two meanings? Dr. Pratt insists (quite correctly, as it seems to me) that truth or falsity is a character of ideas only when ideas are in judgment: only, that is, as I understand it, when they intend a certain objective reference. The men who denied the existence of the antipodes presumably had the idea (or they could not have denied its truth), and the object was "as" they thought it when they "had" the idea. But their idea was not "true" because their judgments denied a certain *objective* connection. And when I "believe" my friend is in Constantinople, I do not merely entertain the idea as a floating image; I intend a factual reference. In short, the question of truth is not whether an *object* is "as you think it," unless the term "think" means as you *judge* it to be. The logical idea is short for a certain *judgment* about a thing. It states the way an object is *judged to be*, the way we *take it* in the inference process, as distinct from the way it actually may be.

If we compare this conception of truth with that of "identification with known fact," we get some striking results and some even more striking questions. When there is a *known fact*, there *is* a known fact and no judgment, and no idea. The known fact may very well be the *outcome* of a judgment, but it can not be part of any judgment that involves a *thought* of *B's* whereabouts. Or (since it is not the word judgment we are concerned with) the *kind* of judgment occurring when it is a *known* fact where *B* is, is radically different from that occurring when, his whereabouts *not* being certain, we inferentially judge him to be at Constantinople. Since the latter involves inference, consideration of evidence, it involves some doubt. Do we have any *thought* (as a part of an intended objective reference) of *B's* presence in Constantinople, save as we have also the thought of his *possible* presence somewhere else, plus the conviction that the weight of evidence is in favor of his being in Constantinople?

These questions suggest that before we can raise intelligently the question of the truth of ideas, we must consider the question of their status in judgment, judgment being regarded as the typical expression of the inferential operation. (1) Do ideas present themselves except in situations which are doubtful and inquired into? Do they exist side by side with the facts to which they refer *when* these facts are themselves known? Do they exist except when judgment is in suspense? (2) Are the "ideas" anything else except the suggestions, conjectures, hypotheses, theories (I use an ascending scale of terms) tentatively entertained during a suspended conclusion? (3) Do they have any part to play in the conduct of inquiry? Do they serve to direct observation, colligate data, and

guide experimentation, or are they otiose?[5] (4) If the ideas have a function in directing the reflective process (expressed in judgment), does success in performing the function (that is, in directing to a conclusion which is stable) have anything to do with the logical worth or validity of the ideas? (5) And finally, does this matter of validity have anything to do with the question of truth? Does "truth" mean something inherently different from the fact that the conclusion of one judgment (the known fact, previously unknown, in which it terminates) is itself applicable in further situations of doubt and inquiry? And is judgment properly more than tentative save as it terminates in a *known fact, i. e.,* a fact present without the intermediary of reflection?

When these questions—I mean, of course, questions which are exemplified in these queries—are answered, we shall, perhaps, have gone as far as it is possible to go with reference to the *logical* character of ideas. The question may then recur as to whether the "ideas" of the epistemologist (that is, existences in a purely "private stream of consciousness") remain as something over and above, not yet accounted for; or whether they are perversions and misrepresentations of logical characters. I propose to give a brief dogmatic reply in the latter sense. Where, and in so far as, there are unquestioned objects, there is no "consciousness." These are just things in their factual relations. When there is uncertainty, there are dubious, suspected objects; things hinted at, guessed at. Such objects have a distinct status, and it is the part of good sense to give them, as occupying that status, a distinct caption. "Consciousness" is a term often used for this purpose; and I see no objection to that term, *provided* it is recognized to mean such objects as are problematic, plus the fact that in their problematic character they may be used, more effectively even than accredited objects, to direct observations and experiments which finally relieve the doubtful features of the situation.[6] Such "objects" may turn out valid, or they may not. But, in any case, they may be used. They may be internally manipulated and developed through ratiocination into explicit statement of their implications; they may be employed as standpoints for selecting and arranging data, and as methods for conducting experiments. In short, they are not merely hypo-

[5] When it is said that an idea is a "plan of action," it must be remembered that the term "plan of action" is a formal term. It throws no light upon *what* the action is with respect to which an idea is the plan. It may be chopping down a tree, finding a trail, or conducting a scientific research in mathematics, history or chemistry.

[6] Such a use differs from that of Perry, who would employ the term to connote formerly accepted, but now definitely discredited, objects: recognized errors, illusions, etc.

thetical; they are *working* hypotheses. Meanwhile their aloofness from accredited objectivity may lead us to characterize them as merely ideas, or even as "mental states," provided once more we mean by mental state just this logical status.

We have examples of such ideas in symbols. A symbol, I take it, is always itself, existentially, a particular object. A word, an algebraic sign, is just as much a concrete existence as is a horse, a fire-engine or a fly-speck. But its *value* resides in its representative character; in its suggestive and directive force for operations which when performed lead us to non-symbolic objects, which, without symbolic operations, would not be apprehended, or at least be as easily apprehended. It is, I think, worth noting that the capacity (*a*) of entertaining objects as mere symbols and (*b*) of employing symbols instrumentally furnishes the only safeguard against dogmatism, *i. e.,* uncritical acceptance of any suggestion that comes to us vividly; and that it furnishes the only basis for intelligently controlled experiments.

I do not think, however, that we should have the tendency to regard ideas as *private,* as personal, if we stopped short at this point. If we had only words or other symbols uttered by others, or written or printed, we might call them, when in objective suspense, mere ideas. But we should hardly think of these ideas as *our own* states. Such extra-organic stimuli, however, would not be adequate logical devices. They are too rigid, too "objective" in their own existential status. Their meaning and character are too definitely fixed. For effective discovery we need things which are more easily manipulated, which are more transitive, more easily dropped and changed. Intra-organic events, adjustments *within* the organism, that is, adjustments of the organism considered not with reference to the environment but simply as events on their own account, are much better suited to stand as representatives of genuinely dubious objects. An object which is *really* doubted is by its nature precarious and inchoate, vague. What is a thing when it is not yet discovered and yet is being tentatively entertained and tested?

Ancient logic never got beyond the conception of an object whose logical *place,* whose subsumptive position as a particular with reference to some universal, was doubtful. It never got to the point where it could search for particulars which in themselves as particulars were doubtful. Hence it was a logic of proof, of deduction, not of inquiry, of discovery, and of induction. It was hard up against its own dilemma: How can a man inquire? For either he knows that for which he seeks, and hence does not seek: or he does not know, in which case he can not seek nor could he tell if he found. The individualistic movement of modern life detached, as it were, the

individual, and allowed purely private (*i. e.*, intra-organic) events to have transitively and temporarily a worth of their own. These events are continuous with extra-organic events (in origin and eventual outcome); but they may be considered in temporary displacement as uniquely existential. In this capacity they serve for the elaboration of a delayed but more adequate response in a radically new direction. So treated they are tentative, dubious but experimental, anticipations of an object. They are "subjective" (*i. e.*, individualistic) surrogates of public, cosmic things, and they may be so manipulated and elaborated as to terminate in public things which without them would not exist as empirical objects.[7]

The distinct perception then of intra-organic events, not as merely effects or distorted refractions of cosmic objects, but as inchoate *future* cosmic objects in process of empirical construction, solves, to my mind, the paradox of so-called subjective and private things which yet have objective and universal reference, and which operate so as to lead to objective consequences that test their own value. When a man can say this color is not necessarily the color of the glass or the picture or even of an object reflected, but is at least *my* color, an event which I may refer to my organism till I get *surety of other reference,* he is for the first time emancipated from the dogmatism of unquestioned reference, and is set upon a path of experimental inquiry which may lead to the discovery of a previously unexperienced thing, and possibly to a thing of a qualitatively different order from anything previously experienced.

I am not here concerned with trying to demonstrate that this is the correct mode of interpretation. I am only concerned to point out its radical difference from the view of the critic, who, holding to the two-world theory of existences which from the start are divided into the fixedly objective and the fixedly psychical, interprets the view that the distinction between the objective and the subjective is a logical-practical distinction, in terms of his own theory. Whether the logical, as against the ontological, theory be true or false, it can hardly be fruitfully discussed without a preliminary sympathetic apprehension of it.

JOHN DEWEY.

COLUMBIA UNIVERSITY.

[7] I owe this idea, both in its historical and in its logical aspects, to my former colleague, Professor Mead, of the University of Chicago.

REVIEWS AND ABSTRACTS OF LITERATURE

Mental Pathology in its Relation to Normal Psychology. GUSTAV STÖRRING. A course of lectures delivered at the University of Leipzig. Translated by Thomas Loveday. London: Swan, Sonnenschein & Co. 1907. Pp. 298.

The English title is rather modest and does not give the full scope which the author claims to encompass in his lectures. In the original German the title is "Vorlesungen über Psychopathologie in ihrer Bedeutung für die Normale Psychologie mit Einsschluss der Psychologischen Grundlagen der Erkenntnistheorie." Professor Störring's aim is not only to relate psychopathology with normal psychology, but also to furnish some psychological foundation for epistemology. The aim is certainly praiseworthy, as few psychiatrists are willing to put their work on such a broad basis.

Störring starts with definitions of psychology and psychopathology. Psychology is defined as "the science of conscious processes" (*Bewusstseinsvorgänge*), and psychopathology as "the science of morbid mental processes" (*krankhafte Bewusstseinsvorgänge*). He does not explain in what respect the two sciences differ. Is normal psychology the general science, and abnormal psychology a special science based on the former, or are the two of equal rank? From his lectures it appears that he treats normal psychology as the general science and relates the two sciences as physiology is to pathology; the one deals with normal, the other with abnormal mental states or processes. The author does not think it necessary even to refer to the view that psychology may be treated as the science of the self. He makes a brief reference to "the soul," and dismisses the whole matter with the contemptuous term of "metaphysical psychology."

The division which Störring follows in his lectures is the customary tripartite division of the mind. He gives no reasons for such a classification, and the reader has to take the matter on faith. Intellect, feeling, and will are the three main functions or processes of the mind, and the main volume of the lectures is divided accordingly; only the lion's share falls to the feelings. For Professor Störring seems to think that the feelings or affects, as he likes to call them, being a disciple of Wundt, are at the very foundation of psychology and give the key to abnormal psychology. One is, therefore, not surprised to find that after defining the subject-matter of psychology and psychopathology he starts with a discussion of feelings and emotions. Feelings, according to Störring, can not be reduced to sensations, special or organic, but constitute a class *sui generis*. At the same time he does not tell whether the affections are special psychic states with special physiological processes, or are mental states due to general bodily conditions, defined by Wundt as reactions arising indirectly in the course of the process produced in the organism directly by external agencies. The affections, according to Störring, seem to be something general and indefinite; they accompany both peripheral and central psychophysiological processes, but themselves are

neither central nor peripheral. A psychology with soul as subject is metaphysical, a psychology with unanalyzable subjective affections is empirical.

In Störring's discussion of emotions the James-Lange theory naturally comes in for a good deal of criticism, if not rebuke. "It does not follow from them [the facts adduced by the theory] that emotions are nothing but sensations of bodily changes (*blosse Empfindungen der körperlichen Veränderungen, blosse Organempfindungen*). Sensations and feelings as given psychically are markedly different in quality." And, further, he emphatically tells us that "so far as I can manage to abstract single sensations out of an emotional state, I find them to be accompanied by affective tones which do not admit of further analysis." "Our view, then, is," he says in another place, "that the bodily changes which occur in these cases cause the emotions by arousing organic sensations and accompanying feeling tones. Further, as the organic sensations form with the affective elements a qualitatively unitary state, we say all these psychical magnitudes are fused in the emotional state (affective state, *Affectzustand*)." "Emotions" thus "represent fusions (*Verschmelzung*) of organic sensations and affective elements." Now "in artificial and pathological cases these are their sole constituents, whilst in the normal emotion there are also present primary affective elements which, however, do not determine its character." This last generalization is rather dogmatically stated, as the author does not attempt to justify it by facts; for it may be maintained that, on the one hand, "fusions of organic sensations and affective elements" play a primary role not only in artificial and pathological cases, but also in normal cases, and that, on the other hand, ideas and perceptions, with their accompanying primary affective elements or "simple feelings," are also present in artificial and pathological cases.

In one paragraph the author disposes of the problem of the relation of emotions to what are called "simple feelings." "We must distinguish the primary affective elements from the consequences of organic changes which become combined with them." Simple feelings and emotions differ. This thesis, however, is not well sustained, for he soon proceeds to tell us that "although organic sensations and organic feelings do enter into 'simple feelings,' still the concomitant bodily phenomena are so weak (!) that the intensity of the sensations and affective tones they provoke plays but a small part in the whole phenomenon, whilst, as we said, in emotions these form the principal constituents. Further, it may happen that the bodily changes are of such slight intensity as to arouse no sensation at all." This slight admission practically does away with the whole thesis, inasmuch as the difference between "simple feelings" and emotions is reduced to one of massiveness and possibly to intensity of organic sensations. Simple feelings and emotions may, then, be reduced, according to Störring's own admission, to peripheral processes coming from organic conditions; in other words, simple feelings and emotions really do not differ, they are identical and take their origin

in organic sensations. The very summary weakens Störring's position: "Emotions differ from simple feelings in two respects: firstly, the relative intensity in the total effect of organic sensations and organic feelings, on the one hand, and primary affective tones, on the other, is different; and secondly, qualitative differences also exist, since certain organic sensations which are present in emotions do not occur in feelings, or it may be merely because organic sensations are in 'simple feelings' disproportionately dim." The difference, then, between "simple feelings" and emotions is simply a matter of intensity, dimness, and massiveness of organic sensations present. But as such a difference may also be found between one emotion and another, there is really nothing present by which "simple feelings" can be differentiated from emotions.

Having defined the difference between normal and morbid emotions by the presence or absence of primary affective elements, the accompaniments of ideas and percepts, Störring is left in the lurch as to how to differentiate between emotions and moods; the latter can only be differentiated from the former by the fact of "the comparatively slight excitement and the comparatively long duration." In this respect we can not help agreeing with Stout that "an emotional mood is not quite the same thing as an emotion properly so-called. An emotion properly so-called must be felt in relation to some definite object; to be angry we must be angry about something. But the general state of irritation due, let us say, to a sleepless night, has not, as such, any definite object." On the whole, the view of affective processes as expounded by Störring can not be maintained consistently.

Störring's treatment of hallucinations follows closely the accepted views, namely, that intensified images may become sensory and perceptual,—hallucinations are "subjective sense images which strike him (the subject) as actual perception." The identification of idea, image, and sensation is one of the most fundamental psychological and psychopathological fallacies.

Störring has a great love for generalizations, which is rather praiseworthy, but occasionally the adventuresome love of generalization is apt to lead him into rash statements. Thus he tells us that "hallucinations have far more influence than simple perceptions upon intellectual and volitional processes." This generalization is supported by a single unanalyzed hysterical case, whose conduct was so influenced by her hallucinations that the author could not change it. In the light of recent research on hysteria and subconscious manifestations, the phenomena observed by Störring are merely superficial symptoms and can not be taken on their face value. One third of life normal persons pass in sleep, and most are subject to dream hallucinations, but it can hardly be claimed that dream hallucinations have a greater influence than simple perceptions upon intellectual and volitional processes. Again, there are many cases of hallucinations in normal and intelligent people on whom the influence of the hallucinations is next to nothing. It is only when hallucinations chime in with superstitions and prejudices that the influ-

ence becomes marked. In the unbalanced and the insane the hallucination may have a deep influence, but then it is not so much the hallucination *per se* that produces the effect as the general morbid condition of the mind as a whole.

Störring is greatly troubled by the fact that the "intensity" of ideas and independence of the will are not sufficient to give an idea the objectivity of a percept, and so he adds "concomitant muscular and visceral sensations," which, according to him, fix the characteristics or marks of the percept. It is the well-known psychological view that muscular sensations give objective reality. "The sensations meant are such as arise from the activity of sense organs in perception." The English translation here misleads the reader by referring to "secondary sensations," and their reproduction in the percept. What Störring refers to is *Nebenempfindungen,* or to associated sensations, which are widely different from the phenomena known in psychology and psychopathology as secondary sensations. Störring means "Nebenempfindungen die von der Thätigkeit der Sinnesorgane bei der Wahrnehmung berühren. Solche Nebenempfindungen können natürlich ebenso reproduziert werden wie die Hauptempfindungen." In other words, along with the special visual sensation, for example, the sense organ makes movements of adaptation and adjustment; these muscular sensations are thus associated with the special visual sensations, and it is those reproduced associated sensations or *Nebenempfindungen* of muscular sense that constitute the external reality of the percept or of the intensified idea. The hallucination, then, is an intensified, reproduced image of a special sensation, with intensified reproduced associated images of previous muscular sensations which thus constitute the complex *reproduzierte Mitempfindungen.* It is the old doctrine of hallucination: a hallucination is an intensified ideational or image complex. The doctrine appears different from what we read in every text-book, on account of Störring's style of writing and exposition, further obscured by an inadequate translation. The sensational intensity of the hallucination is due to the "abnormal irritability of the cortex." The logic of facts seems to force Störring to assume some peripheral source in the origin of hallucinations, so he finally comes to the conclusion, in the analysis of one of Cramer's cases, that "an idea obtains objective character by fusing with an objective impression; it acquires the impression's intensity and shares its objectivity." Similarly, illusions depend on the perceptual process of assimilation, which "consists in a sense impression reviving an associated idea and fusing with it into one perceptual whole. Thus we can distinguish an objective and a subjective element in perception, and we call it illusion when the subjective factor plays an abnormally prominent part in the process of assimilation." A close examination of Störring's illusions and hallucinations reveals the current psychological views put forth in a complicated, obscure, and confused form.

Störring then concludes his treatment of hallucinations with a peculiar attempt to decide the question "whether there are separate centers

for the correlates of sensational and ideational processes, respectively." He comes to the important conclusion that the "functions of the two are separate." This conclusion is arrived at on the strength of two hysterical cases of visual disturbances and one of Wilbrand's cases. Störring is either not acquainted with or has overlooked the subconscious side of sensory disturbances in hysteria. An attempt to decide localizations of psychic functions on the strength of hysterical cases is not unlike the attempt made to study brain localizations on the strength of hypnotic experiments. It shows how difficult it is for one who has not a first-hand knowledge of subconscious activities to grasp fully the meaning of functional disturbances of hysteria and of allied mental states.

The author's summary of the different forms of aphasia is very good. He presents the main views on the subject, and brings cases which he closely analyzes and from which he draws conclusions interesting to normal and abnormal psychology. His view of "valence" of association "paths" is certainly interesting. "I speak of an association between ideas as having strong valence when it enables one idea to reproduce another correctly as to content and in time without retardation (relatively to the average rapidity of reproduction in the particular associational system); whilst I call the valence weak when the reproductive tendency of the first idea is not strong enough to revive the second, but requires support, say, from some third idea which has a similar connection with the second." This principle is ingeniously utilized in the explanation of pathological material of aphasia, agraphia, alexia, apraxia etc. He further finds that "in the mechanism of spontaneous speech and in that of reading this interesting condition is realized: an idea *a* is doubly associated with an idea *c*, first, through an intermediate idea *b*, and, secondly, directly; the association of *a* and *c* is extremely frequent; and yet *a* does not develop a strong tendency to direct reproduction of *c*, even though one may voluntarily recall *c* by means of *a* times without number and may have no direct interest in a preliminary revival of *b*. In the mechanism of writing, on the other hand, the direct connection attains strong valence." This is explained on the principle of valence of the various association paths of the respective activities of spontaneous speech, reading, and writing. Störring, as usual, adheres to the orthodox view of "images and brain localization."

From aphasia the author passes to the amnesias, and he rightly refuses to differentiate the two on the basis of organic and functional derangements. In aphasia we deal with elementary processes of frequent repetition, while in the amnesias we deal with mental processes of high complexity. Störring deals first with the *Dämmerzustände* of epilepsy, psychic epilepsy, and hysteria. (The term "mental fog" used by the translator for *Dämmerzustände* is not a very happy one.) In his discussion of psychic epilepsy he takes it for granted that the states are of an epileptic nature, evidently not being aware of the fact that many of the *Dämmerzustände* known as psychic epilepsy are not at all of an epileptic

character. According to Störring, there is in psychic epilepsy and its *Dämmerzustände* a modification of organic sensibility "which is the explanation of the amnesic phenomena." In other words, Störring arrives at the interesting generalization that memory is a function of organic sensations, "the *concausæ* of reproduction"; memory changes with the modification of organic sensibility. Space does not permit discussing this view in full and pointing out its unpsychological character, its many shortcomings, its lack of conformity with facts. As the subject has been discussed by me in my previous works, the ground need not be gone over here again. It is enough to refer to the fact established by many investigations in my laboratory, a fact which has since been confirmed by other investigators, that many *Dämmerzustände* of psychic epilepsy are of a purely subconscious nature and have nothing to do with epilepsy proper and its changes of organic sensibility. The whole argument of Störring's is an *ignoratio elenchi.* Epilepsy with its modifications of organic sensibility is not necessarily connected with "psychoepileptic *Dämmerzustände.*" Moreover, there may be changes of organic sensibility, as in many intestinal and other severe bodily maladies, without the least change in memory, and there may be profound changes in memory without the least changes in organic sensibility, such as in the amnesias brought about by traumatic conditions and by states of dissociation. Organic sensations are neither *causæ* nor *concausæ* of memory.

When we come to the so-called *Dämmerzustände,* or, rather, subconscious states of hysteria, the author displays a want of knowledge and a lack of appreciation of facts as should be expected of the doctrinaire, dogmatic, reasoning spirit so highly characteristic of people who cull their knowledge of facts from articles and books. Störring has evidently no direct experience of subconscious states, artificial or spontaneous, and he theorizes dogmatically on cases he has read in Janet, Breuer, and Freud, and a few other original investigators.

The derangement of affectivity (*Die Störrung des Gefühlslebens*) seems to the author the most characteristic manifestation of hysteria. "It consists, firstly, in great instability of affective states, and, secondly, in abnormal intensity of the concomitant bodily phenomena, more particularly—and so far as I know, this point has never been emphasized before—of those accompanying reproduced affective states (*reproduzierte Gefühlszustände*) which are themselves abnormally intense in consequence." Störring is evidently not aware of the fact that *recurrence* of mental states characteristic of dissociated states in general has been put by psychopathologists at the very foundation of psychopathology. Störring reminds one of the man who has just invented gunpowder. The interesting point is that Störring does not understand the importance of recurrent states, and when he comes to hysterical anesthesias, the most elementary phenomena of functional psychosis, he breaks down helplessly, confessing "we can not tell how precisely they originate." He falls back on Janet's hypothesis of "hysterical narrowing of consciousness," a hypothesis the full significance of which the author does not realize.

When we come to the phenomena of multiple personality, we find him to be at sea, floundering about helplessly, making wild statements and fanciful hypotheses. He tells us that "the facts which have led some authors to assume a splitting of consciousness into parts are comprehensible without that assumption." The phenomena of double and multiple personality are simply a matter of alteration of organic sensibility. "We saw in the last lecture how a modification of organic sensations affects memory, namely, by introducing an alteration in the *concausæ* of reproduction. In the same way it makes the phenomena of double consciousness perfectly intelligible. When one abnormal state is after a normal interval succeeded by another abnormal state, in which there is a similar alteration of organic sensibility, then, as we have seen, the events of the first abnormal state can be recalled. But that is not so in the normal interval. During the normal interval there is partial amnesia for the events of the first abnormal condition, owing to an essential modification of the *concausæ* of reproduction. In the subsequent abnormal state memory is restored, because the general conscious complex is once more the same as it was in the first state." As a matter of fact, organic sensibility has nothing to do with memory, and in the cases of double and multiple personality studied by me there was not present the least trace of changes of organic sensibility. Thus in the Hanna case, the most typical case of double personality, since no hypnotic suggestions were present to mar the manifestations, the organic sensibility of the two personalities was essentially the same. The phenomena of simultaneous disintegration of consciousness or of coexistent, but dissociated, consciousnesses, or personalities, are explained by the same affective states, so that there is no need to assume "splitting of consciousness." The author gets here so far away from facts and his explanations are so confused and obscure that there is no need to trouble the reader with a criticism of his theories.

All forms of amnesias are explained by changes of organic sensations and by intense affective states which inhibit ideas "rising on the threshold of consciousness." Störring's hypothesis is in gross contradiction to facts. In the many cases of amnesia studied in my laboratory no changes of organic sensibility were observed that could in any way be correlated with the amnesias under investigation. Other investigators found the same result. Again, in hypnosis and in artificially induced somnambulism amnesia is induced at the mere suggestion of the experimenter; organic sensibility has absolutely nothing to do with it. The amnesia again can be removed at the mere gesture of the experimenter. Many, if not all, of the hysterical or functional amnesias are just of that type, and there is no question of affective changes or of modifications of organic sensibility.

Störring attacks Janet's and Binet's "assumption of unconscious sensations and ideas" (*unbewusste Empfindungen*), and assumes the hypothesis of "dimly conscious states" (*dunkelbewusste psychische Grösse*). He attacks a man of straw. No psychopathologist of note who has a first-

hand acquaintance with the facts would for a moment maintain the assumption of unconscious ideas. Störring does not understand the central point of modern psychopathology, namely, the demonstration not of "unconscious," but of *subconscious,* or of what my friend Dr. Prince terms, to avoid all misconception, *coconscious* mental states, mental states which are dissociated, but none the less *conscious.*

Störring's discussion of imperative or insistent ideas is very much on a par with his discussion of amnesias and phenomena of double and multiple personality. The affective states which are supposed to bring about amnesias are called in here to bring about the opposite effect, namely, to cause a hyperamnesia and fix the idea in consciousness. Störring thus manages to get the utmost out of the affective states. The affective states are worked for all other abnormal mental states. The same tune with slight variations serves for all occasions. Paranoia, manic-depressive states, *dementia præcox,* melancholia, and allied psychoses, all find their explanation in the affective tones of organic sensations.

We may possibly refer to Störring's theory of the physiological correlate of feeling tone. He favors the view maintained by many psychologists since the time of Spinoza that "pleasure (*Lust*) is concomitant with an increase, unpleasure (?) (displeasure, *Unlust*) with an abatement, of vital functions." Agreeable and disagreeable would probably express better the writer's meaning, because pleasure is more related to pain. Now, according to Störring there may be three possibilities: "Pleasure (*Lust*) may be connected either with intake of potential energy, or with transformation of potential into kinetic energy, or with a definite ratio of kinetic to potential energy." He accepts the second possibility. Störring does not refer to one of our foremost American psychologists, Marshall, who many years ago worked out in a separate volume a similar theory based on rich material of facts and with a deep psychological insight into mental life. It seems that Störring is not acquainted with the works of English and American investigators, a fault not uncommon among German writers. It is interesting that the whole theory is based on a single fact, namely, on one experiment performed on the muscle of a curarized frog. "The curve resulting from supramaximal stimulations is markedly differentiated from the rest by an earlier and more rapid fall and by the shorter duration of the twitch." In face of the extreme complexity and difficulty of the problem psychologists will hardly be satisfied with a physiological demonstration of the curarized muscle of the frog.

In spite of all its defects the book is valuable, stimulating, and highly suggestive, as it is the first attempt of its kind to correlate normal and abnormal psychology. One great merit of Störring's lectures is the comprehensiveness with which he attempts to discuss the morbid mental states in their relation to psychology and even to epistemology, and although he fails in many respects, the attempt is certainly of the utmost importance to the psychologist and psychopathologist; his work should be in the hands of every student who is interested in the correlation of normal and abnormal psychology.

BORIS SIDIS.

BROOKLINE, MASS.

Principes de linguistique psychologique: Essai de synthèse. JAC. VAN GINNEKEN. Paris: Marcel Rivière. 1907. Pp. 552.

This book is an attempt to illustrate the place of the Indo-Germanic languages in a system of linguistic psychology. The author has gathered together no inconsiderable amount of philological material, which he has presented in an original and often quite suggestive form. The linguistic student will probably find more of value in the wealth and systematization of this material than in the psychological analyses which are based upon it.

The subject-matter of the book appeared in Flemish some two years since, and the present volume is a translation; by whom, does not appear. It invites comparison with the first two volumes of the "Völkerpsychologie," although the two works really present a considerable contrast. Dr. van Ginneken writes primarily as a philologist, and his psychology is imported; Wundt, on the other hand, represents the psychologist dealing, necessarily largely at second hand, with a wide range of linguistic material. The two fields are so extended that a single investigator could hardly be expected to produce a system of linguistic psychology not open to a good deal of criticism from one source or the other. On the whole, the more valuable contributions may probably be expected from the philological side, as is Dr. van Ginneken's. Analytical psychology, at least, does not yet appear to have made essential contributions to any one accustomed to clear thinking about linguistic processes from the historical standpoint, and there is little opportunity for more purposeless blundering than the attempt to psychologize upon a hypothetical philology.

No one but a philologist would be in a position to discuss the bulk of Dr. van Ginneken's material, though it is, perhaps, fair to assume that an advanced pupil of Uhlenbeck is not likely to fall into any very serious historical errors. He seems to have been critical in his choice of philological sources, though he is apparently unaware of the name of Bülbring, and that of Mauthner receives only a passing mention. The first part of the book deals mainly with psychological data gathered partly from analytical and partly from pathological, only meagerly from experimental, fields. The presentation of linguistic imagery and association is not written by nor for the psychologist, and for him will contain little, if anything, that combines novelty with importance. The second part offers an ingenious analysis of the grammatical categories, and the third deals with the influence of what might be termed the "subjective signification" (*sentiment, conscience directe et subjective de soi*) upon semasiological development; this portion of the work contains some very interesting material on these points. The fourth part deals mainly with the motor aspects of language, and it is here that the deficiency of the work on the experimental side is most apparent; rather more is known of the physiology of motor speech than seems to be made use of in these chapters.

It is also probable that most students of comparative philology would incline to question the value of any system of linguistic psychology whose limits did not farther transcend the limits of the Indo-Germanic family.

In the single instance, for example, of the grammatical categories; it is not altogether easy to understand how the system into which Dr. van Ginneken has built them would maintain itself in those linguistic families in which these distinctions largely disappear. It may be added that the French is difficult, and the book will not be followed readily by any one unfamiliar with philological backslang. It would seem unfortunate that French dialectic abbreviations are used, for German work so preponderates in this field that it requires some effort to remember, for example, that *v.h.all.* means *ahd.*

FREDERIC LYMAN WELLS.

McLEAN HOSPITAL.

JOURNALS AND NEW BOOKS

RIVISTA FILOSOFICA. March–April, 1908. *La creazione* (pp. 149–180): B. VARISCO. – A criticism of Bergson's "L'Evolution créatrice. Evolution is a concept whose application is limited to life on the earth. *Il nuovo individualismo religioso* (pp. 181–209): N. FORNELLI. – (Continued from previous number.) The concentration of the individual and the accompanying privacy of his religious sentiments are new and characteristic symptoms. Assuming the continuity of scientific progress, the sense of the infinite is bound to grow more profound and intimate, while increasing toleration will make us more indifferent to the concrete forms used to represent the infinite. *La psicologia della esperienza indifferenziata di James Ward* (pp. 210–224): A. LEVI. – Continues the exposition of Ward's psychological theories. *Bramanesimo, Buddismo e Cristianesimo* (pp. 225–246): A. TILGHER. – Buddhism is the antithesis and the logical continuation of Brahmanism. (To be continued.) *Psicologia e linguistica* (pp. 247–261): P. F. NICOLI. – An account of certain tendencies in modern linguistic science. *Rassegna bibliografica:* Opere di Ugo Janni F. Filomusi Guelfi, Ernst Cassirer, A. Kann. *Notizie e pubblicazioni—La filosofia al congresso dei classicisti. Sommari delle riviste straniere. Libri ricevuti.*

Cultura Española. Num. X. Madrid. May, 1908. Pp. 335–642.

Hartenberg, Paul. *Psychologie des neurastheniques.* Paris: Felix Alcan. 1908. Pp. 248. 3 fr. 50.

Hill, David Spence. *The Education and Problems of the Protestant Ministry.* Worcester: Clark University Press. 1908. Pp. 94.

NOTES AND NEWS

"THE gift of $750,000 by Mr. Henry Phipps to Johns Hopkins University, for the foundation of a psychiatric clinic, will serve a threefold interest," the *New York Medical Journal* states in its issue of June 20. "In the first place, it will be the mental ward of the general hospital, in

which patients may be received for treatment without the formality of commitment, and without the stigma that attaches itself to patients with mental trouble, a relict of the days of supersition and idolatry, when the mentally ill needed to have devils cast out of them; secondly, it will afford opportunities for instruction in this vast and much neglected field of medicine; and finally, by reason of the rich endowment, laboratories for research will afford unusual opportunities for the carrying out of the extremely technical studies that work in this field requires. It is a subject for much congratulation that through such a gift the importance of mental disorders is emphasized. There is no field of preventive medicine that can reap such fruit as that of psychiatry. We have struggled for years to save legs, to patch up internal organs, to keep out and subdue infections; now is the time to reap a rich harvest in saving the mental powers of mankind. Is there a way to lessen crime, to limit the outlay of the public money in caring for the thousands of dependents, the idiots, imbeciles, demented, and chronic mentally ill? If there is, it will come about only by the better recognition of the mental factors which bring about such conditions. The new psychiatric clinic will serve as a useful beginning in this line, and we confidently look forward to the time when others will see the needs as Mr. Phipps has seen them, and respond to the call."

THE trustees of the Johns Hopkins Hospital and University have elected Dr. Adolf Meyer, of New York, to the directorship of the psychiatric clinic made possible by the gift of Mr. Phipps, and to the professorship of psychiatry. Dr. Meyer has accepted, and it has been arranged for him and the architect, Grosvenor Atterbury, of New York, to go abroad at an early date and study the construction and organization of the leading European psychiatric clinics. Dr. Meyer was born in 1866, in Zurich, Switzerland. He studied in Paris, London, Vienna, and Berlin, and came to this country in 1892. For two years he was pathologist to the Illinois Eastern Hospital, and subsequently director of the clinic in Worcester (Mass.) Insane Hospital. In 1902 he became director of the Pathological Institute of New York State Hospital on Ward's Island, and since 1904 he has been professor of psychiatry in the medical department of Cornell University. He is also president of the New York Psychiatrical Society.

DR. HARVEY CARR, professor of psychology in the Pratt Institute, will succeed Dr. J. B. Watson (professor-elect in Johns Hopkins University) as assistant professor of psychology in the University of Chicago. Dr. Carr will have charge of the work in comparative psychology and will share in the conduct of the general experimental courses.

DR. CLARENCE S. YOAKUM, of the University of Chicago, has accepted a position as instructor in psychology at the University of Texas.